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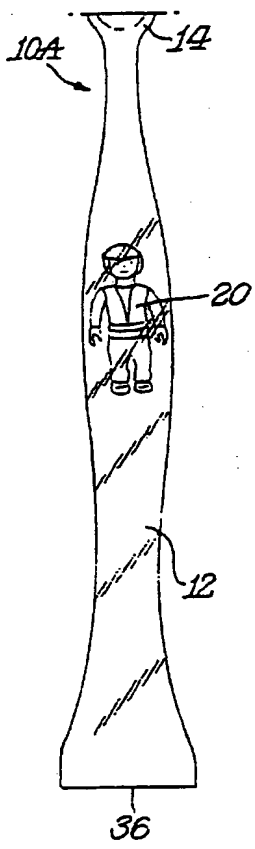
(54) Title: TOOTHBRUSH WITH TRANSPARENT HANDLE




(57) Abstract: A toothbrush comprises an elongated handle and a head having cleaning elements extending outwardly from the head. At least a portion of the handle is made from a water clear material having low durometer hardness. At least one object may be embedded within the handle. The object would be visible through the outer surface of the handle.

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# TOOTHBRUSH WITH TRANSPARENT HANDLE

## Background of the Invention

Various attempts have been made to provide toothbrushes which would encourage children to brush their teeth. It is known, for example, from U.S. Patent No. 5,966,769 to provide a toothbrush with a fillable hollow handle. As described in that patent the handle is constructed from a transparent plastic material which contains a decorative fluid within the hollow interior of the handle component. The brush component and handle component are releasably interconnected so that the user can collect various handle components featuring different characters. The handle components and brush components are interchangeable.

## Summary of the Invention

An object of this invention is to provide a toothbrush having a transparent handle which encourages users, particularly children, to use the toothbrush.

A further object of this invention is to provide such a toothbrush which may contain an object within the handle visible through the outer surface of the handle.

In accordance with this invention the toothbrush comprises an elongated handle and a head secured to one end of the handle. Cleaning elements extend outwardly from the outer surface of the head. At

least a portion of the handle is made from a water clear material which has low durometer hardness to enhance sensorial tactility when the user grips the handle.

In a preferred practice of the invention at least one object is embedded within the water clear handle and the object is thereby visible through the outer surface of the handle. The object could be in the form of speckles such as holographic speckles or could be a colorant or could be a figurine. Where the toothbrush is a power toothbrush the object could be the inner workings of the power drive, such as the batteries, the motor and the shaft.

## The Drawings:

Figure 1 is a front elevational view of a toothbrush made in accordance with this invention;

Figure 2 is a front elevational view of the handle of an alternative toothbrush in accordance with this invention;

Figure 3 is a cross-sectional view taken through Figure 1 along the line 3-3; and

Figure 4 is a front elevational view of yet another toothbrush in accordance with this invention.

## Detailed Description

As shown in Figure 1 a toothbrush 10 includes an elongated handle 12. A head 14 is secured to one end of the handle. Cleaning elements 16 are provided on

head 14 extending outwardly from the outer surface of the head 14.

In accordance with this invention at least a part and preferably all of the handle 12 is made of a water clear material having low durometer hardness. Any suitable material may be used. For example, such water clear material is available from Tecknor Apex of Pawtucket, Rhode Island. A preferred low durometer water clear elastomer material has a durometer range of Shore A 1-15. Such low durometer affords an increased sensorial tactility or "grip feel" that is ideal for toothbrushes especially those used for children and the elderly.

Because at least some of handle 12 is made from a water clear material the invention is preferably practiced by embedding at least one object within the water clear material so that the object can be seen through the outer surface of that portion of handle 12. Any suitable object could be incorporated within handle 12 in accordance with this invention. One example of a suitable object would be variously shaped speckles such as holographic speckles 18 which would be embedded throughout the handle 12 as shown in Figures 1 and 3. Such holographic speckles may be obtained from any suitable source, such as Spectra Teck from Los Angeles, California. Other types of objects could include colorants of various degrees of clarity and translucency.

Other objects could be thermochromic colorants or even small figurines such as figurine 20 shown in Figure 2.

In the embodiments shown in Figures 1 and 2 the toothbrushes 10 and 10A are manual toothbrushes which could be of otherwise conventional construction. Preferably, the head 14 is permanently or non-detachably secured to the handle 12. The invention could be practiced, however, where the head 14 and handle 12 are detachably connected from each other. Each toothbrush also includes a narrow neck portion 22 between the head 14 and handle 12. Neck 22 could be made of water clear material the same as handle 12 or could be made of any other conventional material such as opaque polypropylene used for making head 14.

Figure 4 shows yet another embodiment of this invention wherein the toothbrush 10B is a power toothbrush having a movable section 24 which is illustrated as a circular disk that could be moved in any suitable direction. As shown in Figure 4 toothbrush 10B includes the power assembly in the form of batteries 26 and motor 28 which drives a shaft 30. Shaft 30 extends through neck 22 and causes disk 24 to move. Head 14 may also include static cleaning elements 16 in addition to the cleaning elements that would be on movable portion 24.

In the embodiment shown in Figure 4 the water clear handle 14 permits the inner workings of the power drive to be visible. Thus, the inner workings, such as

batteries 26, motor 28 and a portion of shaft 30 would be the objects visible through the outer surface of handle 12.

As shown in Figure 4 the outer surface of handle 12 could also be utilized to obtain suitable identifying material such as a company logo 32 to identify the source of the toothbrush. The logo 32 could be placed on the outer surface of the handle or could be embedded within the handle to function as the visible object. The logo also may be made of holographic material.

Although Figure 4 illustrates only a single movable section 24 the invention could be practiced where the head 14 includes more than one power or electrically operated movable sections carrying cleaning elements. Such movable section may oscillate in a rotational manner or may oscillate linearly in a longitudinal direction with respect to the longitudinal axis of the head or may oscillate linearly in a lateral or transverse direction with respect to the longitudinal axis of the head. The movable section may oscillate in and out in a direction toward and away from the outer surface of the head. The movable section may rock back and forth with respect to the outer surface of the head. The movable section may rotate continuously in the same direction, rather than oscillate. Any suitable drive mechanism may be used for imparting the desired motion to the movable section. Where plural movable sections are used, all of the movable sections may have the same

type and direction of movement, or combinations of different movements may be used. The movable section 24 could be oscillated rotationally such as by using the type of drive mechanism shown in U.S. Patent No. 5,625,916, or could move in and out using the type of drive mechanism shown in U.S. Patent No. Re35,941, all of the details of both patents are incorporated herein by reference thereto. Alternatively, the other types of drives referred to above could move section 24 in other manners and directions. Although Figure 4 shows movable section 24 to be at the distal end of the head, the movable section(s) could be located at any desired location on the head.

Any suitable form of cleaning elements may be used for the fixed section having cleaning elements 16 and for movable section 24. The term "cleaning elements" is intended to be used in a generic sense which could include conventional fiber bristles or massage elements or other forms of cleaning elements such as elastomeric fingers or walls arranged in a circular cross-sectional shape or any type of desired shape including straight portions or sinusoidal portions. Where bristles are used, the bristles could be mounted to tuft blocks or sections by extending through suitable openings in the tuft blocks so that the base of the bristles is mounted within or below the tuft block.

The invention can be practiced with various combinations of the same or different cleaning element

configurations (such as stapled or in-molded technology bristles, etc.) and/or with the same bristle or cleaning element materials (such as nylon bristles, spiral bristles, rubber bristles, etc.) The cleaning elements could be generally perpendicular to the outer surface of head 14. Some or all of the cleaning elements may be angled at various angles with respect to the outer surface of head 14. It is thereby possible to select the combination of cleaning element configurations, materials and orientations to achieve specific intended results to deliver additional oral health benefits, like enhanced cleaning tooth polishing, tooth whitening and/or massaging of the gums.

The handle 12 could take any suitable form such as having a rounded end 34 such as illustrated in Figure 1 for toothbrush 10 or could have a flat base 36 at its end as shown in Figure 2 which would permit the toothbrush 10A to stand on end during non-use.

In the preferred illustrated practice of this invention the handle 12 and head 14 are permanently or non-detachably connected together. The invention, however, could be practiced where the handle and head are detachably secured together such as shown by the dividing line 38 in Figure 4 between the neck 22 and the handle 12. Although Figure 4 is an illustration of a power operated toothbrush such detachable connection could also be used in a manually operated toothbrush. The detachable connection would permit the manufacturer to

make the head and neck as separate components which could then be attached together and/or permit the user to mix and match different head components with different handle components.

Although the various figures individually show different types of objects embedded within the handle, the invention could be practiced with combinations of objects. Thus, for example, the same water clear handle may include speckles such as holographic speckles and/or a figurine which could be made of holographic material and/or could include different colorants throughout or in selected portions of the water clear handle. Such combinations of objects may be included in the power operated toothbrush in addition to the drive mechanism.

The invention could be practiced where the object is embedded in the transparent material such as shown in Figures 1-3 or where the object is in a hollow cavity in the handle such as shown in Figure 4. Some object(s) may be embedded in the material with objects in a hollow cavity.

The various embodiments thus provide a toothbrush which would have an appearance to attract interest in and encourage use of the toothbrush.

**What is claimed is:**

1. A toothbrush comprising an elongated handle, a head secured to one end of said handle, cleaning elements extending outwardly from an outer surface of said head, at least a portion of said handle being made from a water clear material having an outer surface, at least one object mounted within said handle, said object being visible through said outer surface of said handle, and said water clear material having low durometer hardness to enhance sensorial tactility when a user grips said handle.

2. The toothbrush of claim 1 wherein all of said handle is made from said water clear material.

3. The toothbrush of claim 1 wherein said water clear material is an elastomer material having a durometer range of Shore A 1-15.

4. The toothbrush of claim 1 wherein said at least one object is a plurality of speckles embedded within said water clear material.

5. The toothbrush of claim 4 wherein said speckles are holographic speckles.

6. The toothbrush of claim 1 wherein said at least one object are colorants embedded within said water clear material.

7. The toothbrush of claim 6 wherein said colorants are translucent.

8. The toothbrush of claim 6 wherein said colorants are thermochromic colorants.

9. The toothbrush of claim 1 wherein said at least one object is a figurine.

10. The toothbrush of claim 9 wherein said figurine is embedded within said water clear material.

11. The toothbrush of claim 1 wherein said toothbrush is a power operated toothbrush, and said head including at least one movable section power driven by power operated structure in said handle.

12. The toothbrush of claim 11 wherein said at least one object is said power operated structure, and said power operated structure includes batteries and a motor and a shaft driven by said motor.

13. The toothbrush of claim 1 wherein said handle terminates in a flat base.

14. The toothbrush of claim 1 wherein said head is made from an opaque material.

15. The toothbrush of claim 14 wherein a neck portion connects said head to said handle, and said neck portion being opaque.

16. The toothbrush of claim 14 wherein a neck portion connects said head to said handle, and said neck portion being made from said water clear material.

17. The toothbrush of claim 1 wherein said head is non-detachably secured to said handle.

18. A toothbrush comprising an elongated handle, a head secured to one head of said handle, cleaning elements extending outwardly from an outer surface of said head, at least a portion of said handle being made from

a water clear elastomer material, and said water clear elastomer material having a durometer range of Shore A 1-15 to enhance sensorial tactility when a user grips said handle.

19. The toothbrush of claim 18 wherein all of said handle is made from said water clear material.

20. The toothbrush of claim 18 wherein said head is non-detachably secured to said handle.

Fig. 1.

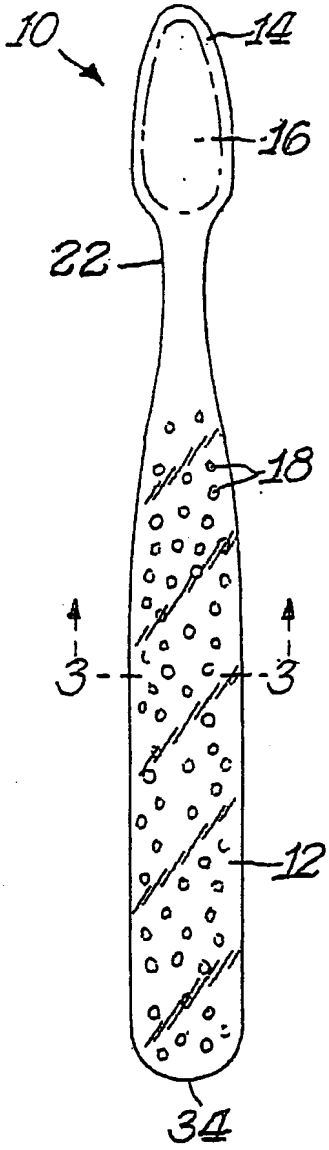



Fig. 2.

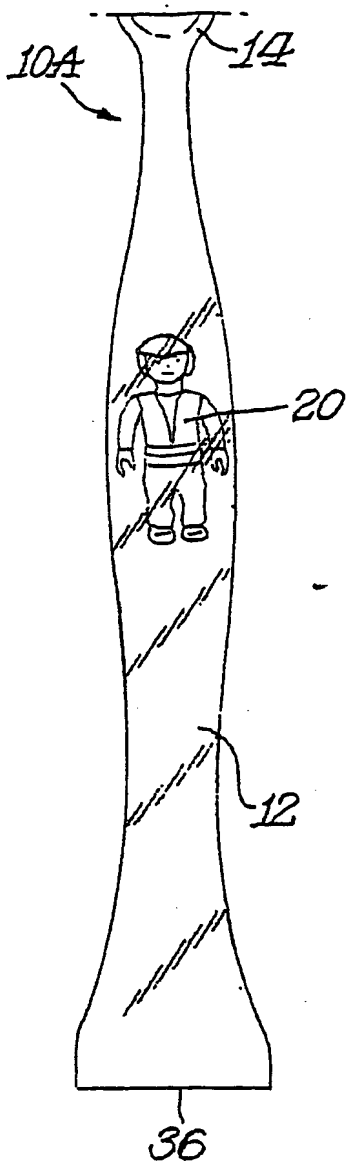
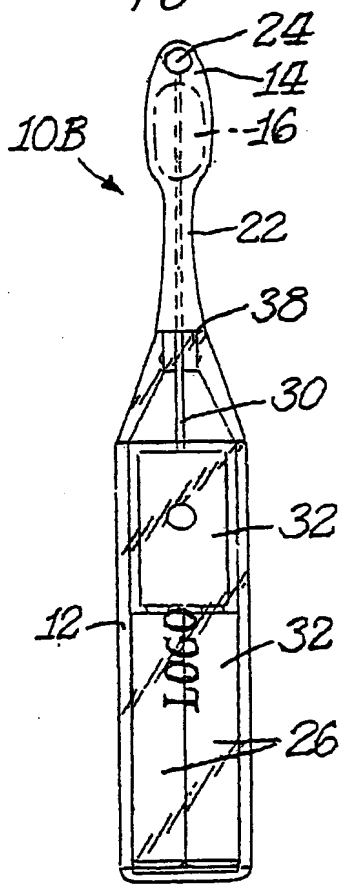



Fig. 3.


Fig. 4.

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(74) Agent: GOLDFINE, Henry, S.; Colgate-Palmolive Company, 909 River Road, P.O. Box 1343, Piscataway, NJ 08855-1343 (US).

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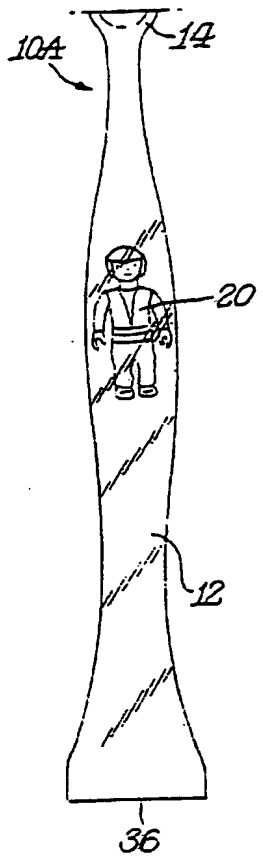
(54) Title: TOOTHBRUSH WITH TRANSPARENT HANDLE




(57) Abstract: A toothbrush (10) comprises an elongated handle (12) and a head (14) having cleaning elements (16) extending outwardly from the head. At least a portion of the handle is made from a water clear material having low durometer hardness. At least one object (18) may be embedded within the handle. The object would be visible through the outer surface of the handle.

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# INTERNATIONAL SEARCH REPORT

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**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : A46B 5/00
US CL : 15/22.1, 143.1, 167.1

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 15/22.1-29, 143.1, 167.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EAST search terms: above noted subs with transparent or translucent

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | US 6,106,294 A (DANIEL) 22 August 2000 (22.08.2000), see figures 1 & 7 and column 2, lines 46-48. | 1,2,9,17 |
| --- | | --- |
| Y | | 11-13 |
| Y | US 3,802,420 A (MOFFAT et al) 09 April 1974 (09.04.1974), see figure 14 and column 6, lines 6-22. | 11-13 |
| X | US 5,778,478 A (COLEMAN) 14 July 1998 (14.07.1998), see column 2, lines 31-37). | 18-20 |
| --- | | --- |
| Y | | 1-3,13,14,16,17 |
| Y | US 2,489,707 A (EUBANKS) 29 November 1949 (29.11.1949), see figure 2 and column 3, lines 30-75. | 1-3,13,14,16,17 |
| X | US 5,966,769 A (TORTORICE) 19 October 1999 (19.10.1999), see figures 1-5 and column 3, line 43 thru column 6, line 37. | 1,2,13-15,17 |
| X | US 2,900,650 A (RIVERO) 25 August 1959 (25.08.1959), column 3, lines 14-21. | 1,3,13-15,18 |
| X | US 2,416,684 A (FISCHER) 04 March 1947 (04.03.1947), column 2, lines 1-9. | 1-3,13-15,18,19 |

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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# INTERNATIONAL SEARCH REPORT

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## C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A,E | US 6,643,884 A (EVERETT) 11 November 2003 (11.11.2003), see entire document. | 1-20 |